

REMARKS:

In Relating to Claim Objections

The claim 18 is amended as the yarn of animal collagen fibers manufactured by the process of claim 4 -----.
Therefore, the objections are overcome.

In Relating to Claim Rejections - 35 USC 112

The -textile fibers- is added before the phrase "to twist the collagen fibers and textile fiber to form yarns" in the currently amended claim 4.

-or said collagen fibers being spun together in comprising 100 WT% of collagen fibers;- is added in the currently amended claim 18

The "bunchy" is amended as -bundle-

Therefore, the 35 USC 112 rejections are overcome.

The claim 1 is canceled. Therefore, the 35 USC 112 rejection is overcome.

In Relating to Rejections - 35 USC 103

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of

success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.1991). See MPEP 2143-2143.03 for decisions pertinent to each of these criteria."

1. Regarding claims 4, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seffan (US4404033) in view of Sakashita et al. (4404033)

The claim 4 has his new features that are different from Seffan in view of Sakashita as follows (the parts underlined):

choosing tanned leathers as raw materials;

loosing the tanned leather materials to get collagen fibers;
assorting the collagen fibers;
blending the collagen fibers with textile fibers;
carding, drawing and twisting the blended collage and textile fibers;

the tanned leather are loosened by a reciprocating liquid opener, which having a container and at least a beater and liquid; the liquid includes water and at least one substance being added to the water selected from 0.2-2 percent (by weight of water) washing agent, 1-10 percent (by weight of water) lipid or product thereof, 0.2-1.5 percent (by weight of water) penetrating agent and 0.03-0.5 percent (by weight of water) basic substances; the liquid makes the tanned leather materials expanding; the beater makes adhesive

substances of fiber matrix among the collagen fibers to become lubricating agent under repeated beating the tanned leather materials.

The applicant respectfully disagrees the **underlined part** of Examiner's comment:

"As to claim 4, Steffan teaches a process for manufacturing yarn of animal collagen fiber, comprising the following steps: choosing tanned leather materials, loosing fibers, assorting, blending, carding, drawing and twisting, wherein an opener is used to loose fibers (tendons from calf treated with an alkali treatment, transferred into a tanning drum, fibers are separated, treatment with tanning agent, fibers dissociated on a carding machine, fiber bands are stretched and twisted, chemical treatment opener is used to loose the fibers (see col. 4, line 43 to col. 5, line 57)."

A. In Steffan the **dissected achilles tendons from calf** are chosen as raw material for manufacturing yarn of animal collagen fiber, **but not the tanned leather materials**. please see col.4 line 45 to 47. Also, the tendons are transferred into a tanning drum and treated with hydrochloric acid, but it is not tanning process. Therefore, "choosing tanned leather materials" commented by Examiner is wrong.

However, in the claim 4 the tanned leather materials are chosen as raw material.

B. In Steffan the **fluted rollers and hammer press** are used for removing water as well as soluble and denatured non-structured proteins to get a dry two-dimensional fibrillar network layer, then using carding machine to get good

untangling of the fibers. At the end of the machine a card web is formed.

But in the claim 4 the liquid makes the tanned leather materials expanding, the **beater** makes adhesive substances of fiber matrix among the collagen fibers to become lubricating agent under **repeated beating** the tanned leather materials, thereby the tanned leathers become bundles of leather fibers.

C. Furthermore, the liquids used in Steffan are different the same used in claim 4.

In Steffan the liquids include a solution consisting of 20% sodium sulfate, 2% sodium hydroxide and 150% water, .

In the claim 4 the water selected from 0.2-2 percent (by weight of water) washing agent, 1-10 percent (by weight of water) lipid or product thereof, 0.2-1.5 percent (by weight of water) penetrating agent and 0.03-0.5 percent (by weight of water) basic substances.

The applicant respectfully disagrees the Examiner's comment: that "Steffan fails to teach or disclose the process wherein the fibers are loosened by a reciprocating liquid opener which has a container and at 'east a beater and liquid. However, Sakashita et al. teaches the process wherein the fibers are loosened by a reciprocating liquid opener having a container and at least a beater, ----- " (OA, P4, Line 7 to 1 from bottom)

Steffan discloses that regenerated collagen fiber and method of manufacturing the same. "In general, the skin or bone of

an animal is used as a raw material in the manufacture of a regenerated collagen fiber. The raw material is treated with an alkali or enzyme to decompose and remove the telopeptide portion of the collagen so as to make the collagen soluble in water. Then, the solubilized collagen is spun to prepare a regenerated collagen fiber."

Therefore, Steffan teach nothing about the fibers are loosened by a reciprocating liquid opener having a container and at least a beater-----.

The applicant carefully studies the following cited contents in Steffan, which is cited by Examiner to support his comments:

Impurities such as glycerides, lipids including phospholipid and free fatty acid, and proteins other than collagen such as glycoproteins and albumin are present in the insoluble collagen. Since these impurities markedly affect adversely the spinning stability, luster, degree of strong elongation, and odor in converting the regenerated collagen into fibers, it is desirable to remove these impurities by applying a treatment widely employed for treating hides. For example, the raw hide is dipped in lime water to hydrolyze the fat and oil in the insoluble collagen to loosen the collagen structure, followed by, for example, an acid-alkali treatment, an enzyme treatment or a solvent treatment. (Steffan, col. 3, lines 54-65)

The applicant cannot find anything relating to container and at least a beater ----- in the above-mentioned contents.

Summary of the above-mentioned comparisons the differences between claim 4 and Steffan in view of Sakashita are as follows:

A. The claim 4 is using tanned leathers to manufacture yarn of animal collagen fiber; but Steffan in view of Sakashita is using **achilles tendons from calf or a raw hide** of animals. The raw materials are totally different, one is tanned, other is not tanned.

B. The claim 4 uses repeatedly beating the marinated tanned leather in liquid by beaters in a container to separate the tanned leather as collagen fiber. The Steffan uses pressing the swollen tendons to remove liquid to get dry fibrillar network layer then using carding machine to untangling of the fibers. The Sakashita uses alkali or ezme to make the collagen soluble in water, then the solubilized collagen is spun to prepare a regenerated collagen fiber. the method of claim 4 is totally different from the method of Steffan in view of Sakashita.

C. The liquids used in claim 4 is different from the liquids used in Steffan in view of Sakashita.

Therefore, the claim 4 is patentable under 35 U.S.C. 103(a) over Seffan (US4404033) in view of Sakashita et al. (4404033)

The claims 9 and 11 are patentable as they are dependent claims of the claim 4 which is allowable.

2. Regarding Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steffan (US 4,404,033) in

view of Sakashita et al. (US 6,160,096), further in view of Fujii et al. (US 3,314,861). .

Claim 5 further defines the tanned leather used in the process for manufacturing the yarn of animal collagen fiber is made from rawhide materials by tanning. The tanning process includes a step of tanning the rawhide materials.

claim 13 is a dependent claim of claim 5, which further define the tanning process in the claim 5.

The Fujii discloses "method for solubilizing insoluble collagen fibers. It is a totally different process from the claim 5. Okamura in view of Steffan, further in view of Fujii et al does not teach a process for manufacturing the yarn of animal collagen fiber from rawhide materials, in which the rawhide materials is tanned for loosing the animal collagen fiber

Okamura in view of Steffan and Fujii does not teach using tanned leather materials as the starting material or using tanning process in their method. Furthermore, Okamura in view of Steffan and Fujii does not teach the processes of drawing and spinning the animal collagen fibers with textile fibers to become a yarn of animal collagen fiber.

Therefore, the claims 5 and 13 are patentable under 35 U.S.C. 103(a) over Okamura, in view of Steffan, further in view of Fujii et al.

3. Regarding claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steffan(US 4,404,033) in view of Sakashita et al (US 6,160,096), further in view of Ueda et al.[US 2004/0073010 A 1].

The claim 7 has its new features as follows:

the assorting has steps including first the loosened dispersing collagen fibers are separated by wind, longer fibers are distributed into a different zone from that of the shorter fibers by function of airflow, second assorting according to the length of the fibers.

The Ueda et al does not teach this kind of assorting by wind.

[0072] Examples of the method for fixing the regenerated collagen fiber into the desired shape are the method of **winding regenerated collagen fiber around a pipe or bar**, the method of stretching regenerated collagen fiber between two or more supporting points and the method of sandwiching regenerated collagen fiber between plates. Another process may be employed as long as the fiber is fixed into the desired shape and the above wet heat treatment and drying treatment can be conducted. (Ueda [0072])

The meaning of winding in the sentence "winding regenerated collagen fiber around a pipe or bar" is that the action of winding something in a twisting or spiral course but not to blow the collagen fibers by wind. Examiner misunderstands the meaning of winding.

Therefore, the claim 7 is patentable 35 U.S.C. 103(a) over Steffan(US 4,404,033) in view of Sakashita et al (US 6,160,096), further in view of Ueda et al.[US 2004/0073010 A1).

4. Regarding Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steffan "(US 4,404,033) in view of Sakashita et al (US 6,160,096) and Fujii et al (US 3,314,861), further in view of Heany (US 1,585,613).

The claim 17 has new features that are not disclosed by Steffan in view of Sakashita et al and Fujii et al, further in view of Heany as follows:

for the Loosing fibers step using a trapeziform opener or a gill box rotary opener or a cutting machine with three cylinders.

Examiner agree that Steffan, Sakashita et al., and Fujii et al fails to teach or disclose that the loosening fibers step uses a trapeziform opener or a gill box rotary opener or a cutting machine with three cylinders. Heany teaches the use of cutting machines to loosen the fibers used for manufacturing yarns (see page 3, lines 4-24).

Heany's invention relates to the manufacture of yarn from mineral or vegetable fibre, but not manufacture of mineral or vegetable fibre.

In the content(Heany, p3, lines 4-24) it is disclosed a cutting machines to cut the paper in rolls into rolls of tape or strip, which is used to twist yarn. It is totally different from claim 17 that is for loosening fibers from

tanned leather. Also, the claim 17 is a dependent claim of claim 4 ultimately.

Therefore, the claim 17 is patentable under 35 U.S.C. 103(a) over Steffan(US 4,404,033) in view of Sakashita et al (US 6,160,096), further in view of Ueda et al.[US 2004/0073010 A1).

5. The claims 6, 8, 10, 12, 14, 15 and 16 are dependent claims of claim 4 ultimately; they possess all new features of claim 4 and adding their new features. Therefore, the claims 6, 8, 10, 12, 14, 15 and 16 are patentable under U.S.C. 103 (a).

6. The claim 21 is patentable as it includes all processes of claim 4 which is patentable.

For all of the above reasons, applicant submits that the specification drawings and claims are now in proper form, and that the claims all define patentably over the prior art. Therefore, applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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